

THE CONNECTION BETWEEN THE TRAFFIC—GEOGRAPHICAL SITUATION OF THE SETTLEMENTS AND THE MOBILITY OF POPULATION IN THE SOUTHERN PART OF GREAT HUNGARIAN PLAIN

GY. KRAJKÓ—KATALIN KAJDÓCSY—R. MÉSZÁROS

Regroupment, migration and numerical changes in population are in close connection. Their regional differences in the Great Hungarian Plain are different from those of the industrially developed regions both formally and elementally and the main causes of these differences are concerned as well.

The industrial development which took place in a specially centralized way in the Southern Part of Great Hungarian Plain, the social and technical changes in agriculture are basic factors which accelerated the above-mentioned phenomena in the population and defined those regularities which can be traced in regional differences. The controlling power of the centres can be seen in an acute way as far as the changes in the population of the surrounding settlements are concerned. The effect of the centres varies depending on how big the centre is and on the traffic-geographical situation of the surrounding settlements.

This makes it possible for us to leave out social and economic factors which have an effect on regional mobility, e.g. settlements forms; the development of local industry; the structure and level of local agriculture, etc.; and makes it possible for us to concentrate on one important factor only, i.e. the traffic-geographical situation of these settlements, and to present this factor as the one which is in very close connection with the phenomena researched.

1. *The main traffic-geographical characteristics of the region*

In traffic-geographical terms the Southern Part of Great Hungarian Plain could be characterized by the fact that there were very important international roads in this area throughout the centuries. These days there are two main railway lines the Danube and one main road playing the same role. The same roads, of course, play an outstanding role in the internal transport of goods, too. The Southern Part of Great Hungarian Plain is a part of the highly centralized system of goods transportation — this centralization is obvious if we have a look at the main directions of the transport of goods.

20% of the railway network of the country is in the Southern Part of Great Plain. The density of the network ($10.3 \text{ km}/100 \text{ km}^2$) is satisfactory; essentially, it is the same as the average for the whole of Hungary ($10.2 \text{ km}/100 \text{ km}^2$), and, as far as the index per head of population is concerned, it is even more favourable (southern Great Plain — $12.9 \text{ km}/1000 \text{ people}$; average for the country — 9.1 km). In spite of this the capacity of the railways is far below the country average. The rate of less

economical railway-lines is the highest in this part of the country, half of the railway-lines being secondary ones in this area, and the rate of narrowgauge railway-lines is quite high, too (about 15%, but at the same time this is 60% of the railway-lines of the same category in the country). This explains the fact that the length of the railway-lines was shortened in this part of the country to a larger extent than in other areas of the country. The less economical lines were closed and this will go on in the future, too. Most of the transport of goods takes place on some of the main lines, first of all on the Budapest—Kiskunhalas—Kelebia line (which is a transit line) and on the Budapest—Kecskemét—Szeged and Békéscsaba—Szeged—Kiskunfélegyháza—Kiskunhalas—Baja transversal lines (see fig. 1).

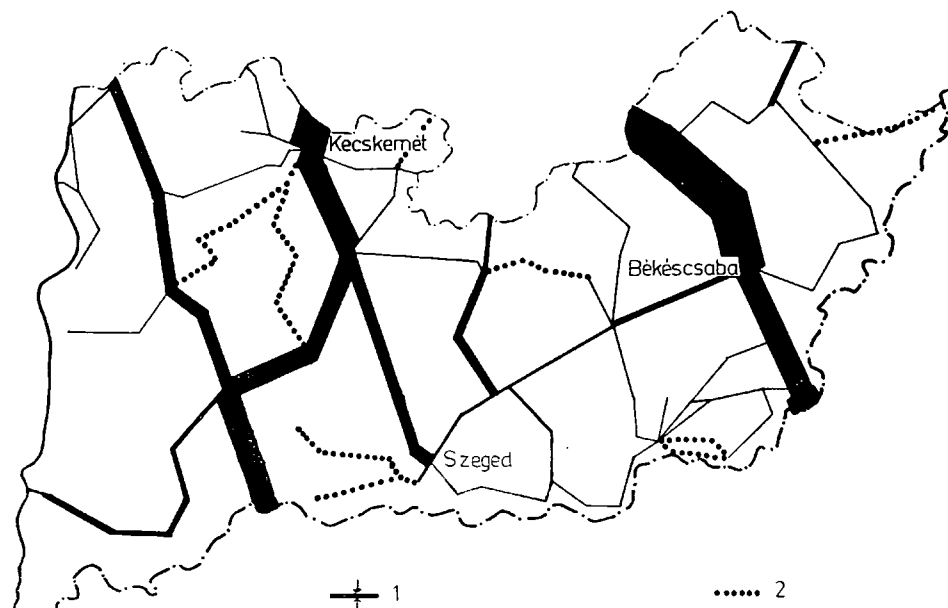


Fig. 1. Railway goods transport (goods ton-kilometre, 1974)

1 = 1 mill. tons/km
2 = 0—100,000 tons/km

Nearly 17% of the roads in the country can be found in this region. The density of the network is 29.1 km/100 km² which is somewhat below the average for the country (31.8 km/100 km²). The length of the roads increased to a small extent during the last 10 years and there was a considerable change in the quality of the roads which is very well indicated by the decrease in macadamized roads (down to 45%) and the increase in dust-free roads (up to 19%). There was a considerable decrease in the length of the dusty path-roads, too. In spite of all this, the rate of up-to-date roads is below the country average and that of path-roads as well as connecting roads is far above it. The quality of the road network leaves a lot to be desired — there is an awful load on the roads resulting from the increased traffic. The main axis of the road traffic is the E5 main road, but there is considerable traffic on the Békéscsaba—Szeged—Baja main road (see fig. 2).

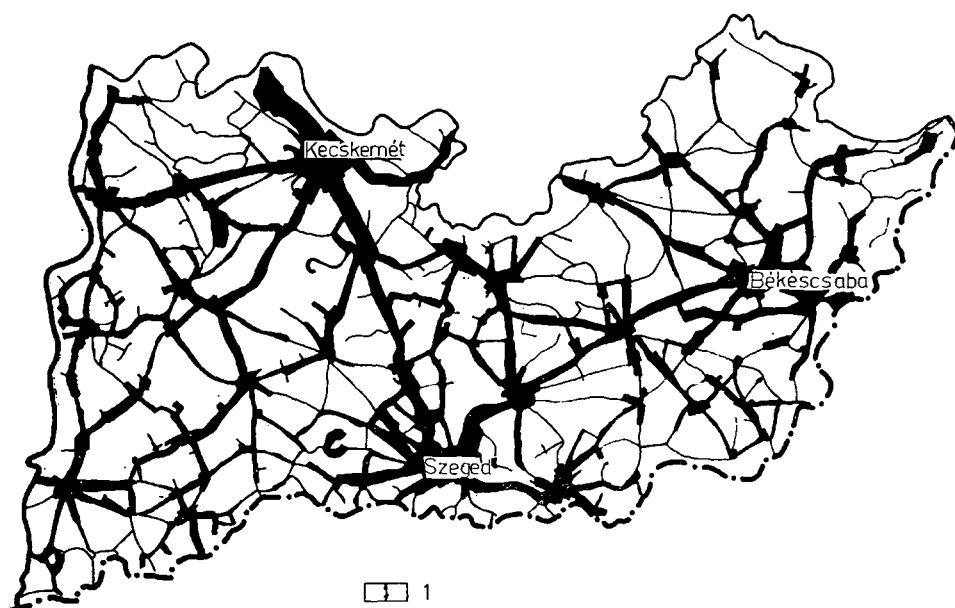


Fig. 2. Load on rads (average daily values, 1970) 1 = 5000 tons/day

The structure and main direction of the transport of goods is defined by the role of this region in the country-wide division of labour. In the case of the Southern Part of Great Plain it is the manufacturing industry and the agricultural branches that characterize the production profile. This makes it understandable that the goods which are transported into this region are mining products — coal, stone, gravel (40%); products of basic material industry — cement, steel (10%); industrial products for agriculture — chemical fertilizers (7%); wooden products (4%). Among the products that are sent out from this region it is petroleum and petroleum products (15%), corn and other agricultural products which form the considerable bulk — perhaps bricks and tiles, too. From this enumeration it is obvious that the amount of goods brought in is greater than that sent out.

Naturally, the closest transport connections of this region, i.e. the Southern Part of Great Plain are those with Budapest. What is more — as a result of the central characteristics of the transport network of the country, the transport of goods to Mid-Transdanubia, to Borsod county and to the Little Plain is carried out through Budapest, too.

The capacity of the two transport branches being taken as 100%, the country-wide rate of railways was 43.6%, while it was 47.7% in this region. The capacity in ton-kilometres is 87.4% and 91.8% respectively. While 20% of the railway network and 17% of the road network of the whole country can be found in this region, the percentage rate of transporting goods in the Southern Part of Great Plain of the transport of goods for the whole country was only 10.9%; in ton-kilometres it was only 8% in 1970. From this one can come to the conclusion that the network load in both branches is considerably below (approximately half) the country-wide average.

2. The Traffic-Geographical Situation of Settlements

2.1. Described factors:

- a. Road network
 - number of roads going through the given settlement
 - the quality of the roads
 - the number of bus-services per week
 - the time during which a destination can be reached from the given settlement
- b. Rail network

The same indices were taken into consideration as in the case of the road network.
- c. The modifying effects of settlements of a central role on the traffic-geographical situation.

The traffic-geographical situation of settlements was classified with the of “*automatic classification*” according to the above-mentioned factors. The computer classified the settlements according to type after which they were placed in an “*n*” dimension space and were represented by vectors in a traffic-geographical aspect; then it gave an exact index-number to describe them, with the help of the particular length of the vectors which were directed towards the focal point of the limited disjunct accumulations.

2.2. Main aspects of processing;

- the number and the quality of roads, because of the close connection between them, were taken as one unit.
- The same method was used as in the case of the indices concerning the railway network.
- During the research one of our great problems was to weight the number of services in the case of the two different branches properly. The taxonomical classification of the area defines their role in public transport, but they have the same function as far as the quality of passenger transport is concerned. This statement is also supported by the fact that there is no correlating connection between bus transport and railway passenger transport. So the number of train services — because of the greater capacity of the train as such — can be related to the number of bus services only by weighting.

The weighting factor can be defined with the help of the accumulated frequency curve of the number of bus and train services per week in a given settlement (see fig. 3) for which the so-called Pearl-Read type logistic curve can be used which gives an approximately good description.

From the ogives it could be put exactly into terms that the relative frequency values of the settlements in the case of railway transport increase 2.15 times more quickly than those for the road transport with an equal increase in services; so the weighting factor between the two branches should be put at 2.15.

Beyond the definition of this weighting factor there are other characteristics which could be described with the help of the logistic function, such as:

- the two areas limited by the two ogives are divided into two areas of the same size by their point of intersection ($x=7.1$) which, according to our opinion,

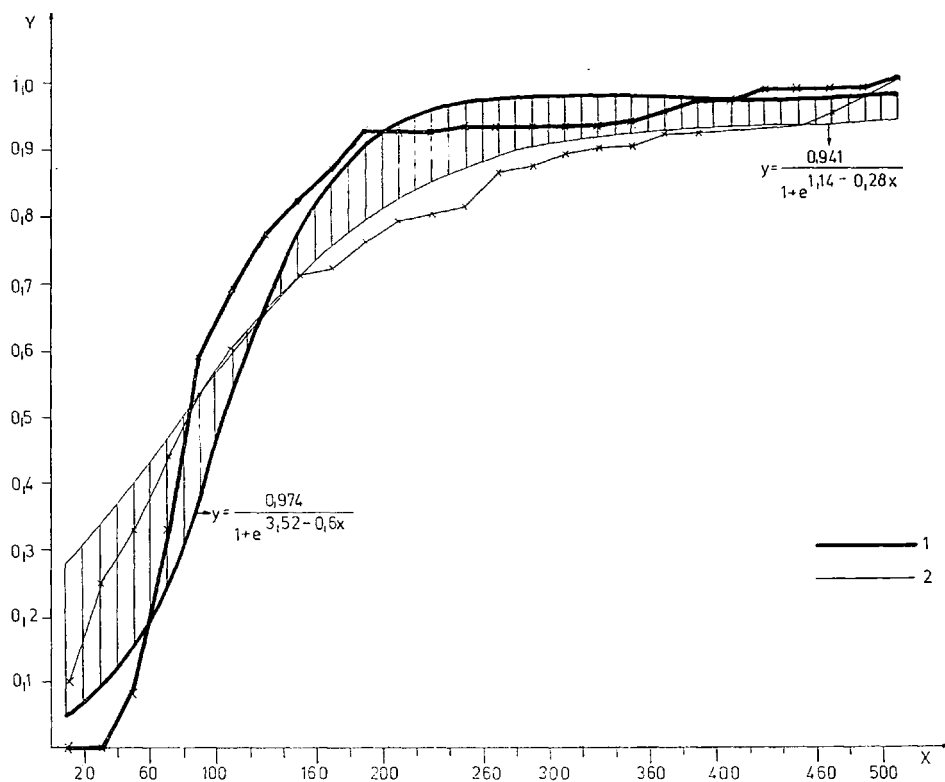


Fig. 3. Accumulated frequency graphs of weekly bus and train services
 1 = train services
 2 = bus services

means that the transport demands of the settlements are satisfied. This is first of all due to the favourable fact that bus transport, according to their claims, joined each settlement by the different bus services.

— In the case of the number of bus services the frequency of settlements is considerably more balanced than it is in the case of railway transport, which means that the possibility for the settlements to join in either of these branches is differentiated and controlled, i. e. it is according to their demands, while in the case of railway transport this characteristic expresses rather a potential possibility than a real utilization. (The economic utilization of railway lines in the Southern Part of Great Plain is below the country-wide level!)

— There is a strong connection with the quality of area of attractiveness made by certain settlements of a central role. The settlements of central role attract the ones with fewer 120 transport services per week only with a relative majority (in some cases this attraction is dominant), while the settlements which have more than 120 services per week belong to the traditional area of attractiveness of the centres.

— The above-mentioned two facts do not do anything but differentiate between the quality of function of the two branches of transport, depending on the taxonomical level of the rayons. This means that road transport is only an element of micro-centre level, which makes it possible for the centres to create their traditional areas of attractiveness in areas of limited distance while, with the help of railway transport, these centres can widen their areas of attractiveness, making it possible to widen their traditional areas of attractiveness, too.

— To measure the modifying effect of settlements of a central role towards the traffic-geographical situation we worked out a system of points the values of which are given by the hierarchical level, the number of population, the size and the quality of the area of attractiveness of the central settlements. In order to define the role of the settlements which do not have a central role and which belong to the area of attractiveness of one or more settlements, and in order to define the role that this fact plays in their traffic-geographical situation, we took into consideration the time during which a settlement of central role can be reached from one of these settlements.

3. Main characteristics of the traffic-geographical situation of settlements.

The big regional centres in the area (Szeged, Békéscsaba, Kecskemét) are in a very good traffic-geographical situation. This favourable situation is due to the fact that these centres have good possibilities for communication with one another and also with other regional centres of the same kind outside this area, not to mention with Budapest. The other settlements of less importance (Orosháza, Hódmezővásárhely) are also in a very good traffic-geographical situation, which is due to the fact that they have good possibilities for quick communication with the above-mentioned settlements.

The above-mentioned settlements play an outstanding role in forming a favourable traffic-geographical situation for other settlements. There are contiguous areas with a favourable traffic-geographical situation around the three regional centres, which are in mutual connection. Although the mutual connection between the areas round Békéscsaba and Kecskemét are weak, they both have a strong connection with the one around Szeged. As a specific fact we must emphasize that the modifying effect of Kecskemét is linear and that its effect towards the West is far less than that of Békéscsaba (see fig. 4).

The role of Szeged is dominant in the creation of a favourable area in the South-Western part of the region, but by taking its quality into consideration we can see that the connection between the economic regions in the South Alföld and those in Transdanubia are very weak.

The settlements of outstanding central role could be characterized by the fact that they are in the same traffic-geographical situation as their environment, perhaps on a slightly higher level, but they are not able to improve the traffic-geographical situation of their environment considerably. There are only a few settlements in the environment of Kiskunhalas—Kiskőrös which are in a more favourable situation but they are also in close connection with Szeged, which fact is dominant in their case.

Another considerable fact is that the traffic-geographical situation of the settlements of central role which are on the same level of the hierarchical order of set-

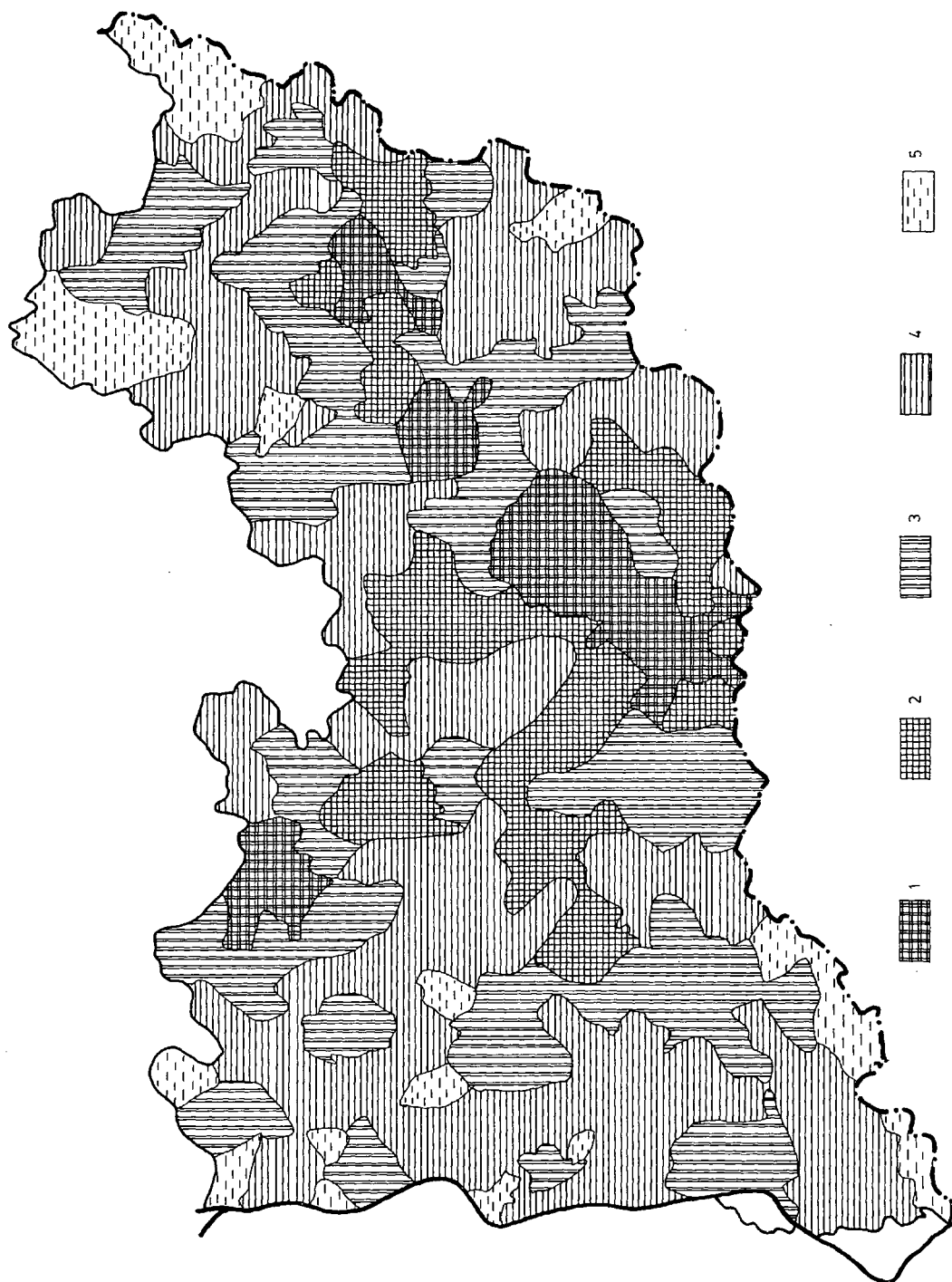


Fig. 4. Traffic-geographical situation of the settlements in the Southern Part of Great Plain
1=excellent, 2=good, 3=medium, 4=unfavourable, 5=bad

tlements is different, e. g. Baja, Orosháza. Their effect on the traffic-geographical situation of their environment depends on their own economic background and on how close their connections with other centres are, e. g. Szeghalom—Kiskunmajsa.

The general traffic-geographical situation is modified to a great extent by the settlement-morphology of the area. The system of big villages on its own would make the situation less favourable and together with the system of cottages makes it impossible to develop areas of the same traffic-geographical situation. This negative effect can be traced especially along the Budapest—Kelebia main railway line, but it can also be traced in the case of some other settlements (e. g. Lászlófalva, Pusztaszer, etc.).

The number of settlements in bad and worse traffic-geographical situations is considerable. They form contiguous areas in the Western, South-Eastern and North-Eastern parts of the region. These areas are industrially the least developed parts of the mezo-region and in spite of the fact that there is a main road in this area the lack of economic background makes the transport situation of this area very bad.

The rate of settlements in a very bad traffic-geographical situation is highest in Bács-Kiskun county (69.9%), (see table 1).

The unfavourable picture is interrupted — apart from a favourable area in the Southern part of the region which extends from East to West — only by a few settlements which are in a favourable position: they form a mosaiclike picture. As a very important factor we must call attention to the fact that apart from the region's being underdeveloped industrially and the unfavourable settlement-morphology the regional centre of the county is situated on the periphery, and its other centres, except Baja and Kiskunfélegyháza are not of a considerable role and, as a result, do not effect their environments considerably. The very few transport possibilities of the settlements are to go to these centres, i.e. the attraction of these centres is so weak in most cases that they are not able to counteract the attraction of another centre of the same, or even of a lower, level. The connection with only one centre is very popular, and so is frequent transport among the settlements of no central role (see fig. 5).

It is an important fact that the Danube Valley, which is to be developed into an industrially highly developed area according to further plans, is a traffic-geographically under-developed area at present.

The rate of settlements in an unfavourable traffic-geographical situation is high in Békés county, too (61.5%), but the general picture is a lot more favourable than that of the former. Owing to the fact that Békéscsaba is situated in the middle of the county and that Orosháza and Gyula have quite an important role, as well as good connections with Szeged, the middle part of the county is in a favourable traffic-geographical situation: what is more, this area has good connections with some areas outside the county in the North-East.

The factors that created large contiguous areas in unfavourable traffic-geographical situations in the South-Eastern and North-Eastern parts of the county are the same as they were in the case of Bács-Kiskun county.

The transport-geographical situation of Csongrád county is highly favourable compared to the other counties of the Southern Part of Great Plain. The rate of settlement of an average and above average level is very high — 62.9%. The settlements in an unfavourable transport-geographical situation are in a small area.

TABLE 1.

Number and Rate of settlements per County in a Grouping according to their Traffic-Geographical Situation

Quality of Traffic- Geographical Situation	Bács—Kiskun county		Békés county		Csongrád county		Souther Part of Great Hungarian Plain	
	number of settlements	rate of settlements	number of settlements	rate of settlements	number of settlements	rate of settlements	number of settlements	rate of settlements
	%							
excellent	1	0,9	2	2,6	2	3,2	5	2,0
good	3	2,7	6	7,7	20	32,3	29	11,5
medium	30	26,5	22	28,2	17	27,4	69	27,3
weak	62	54,9	34	43,6	23	37,1	119	47,0
bad	17	15,0	14	17,9	—	—	31	12,2
total	113	100,0	78	100,0	62	100,0	253	100,0

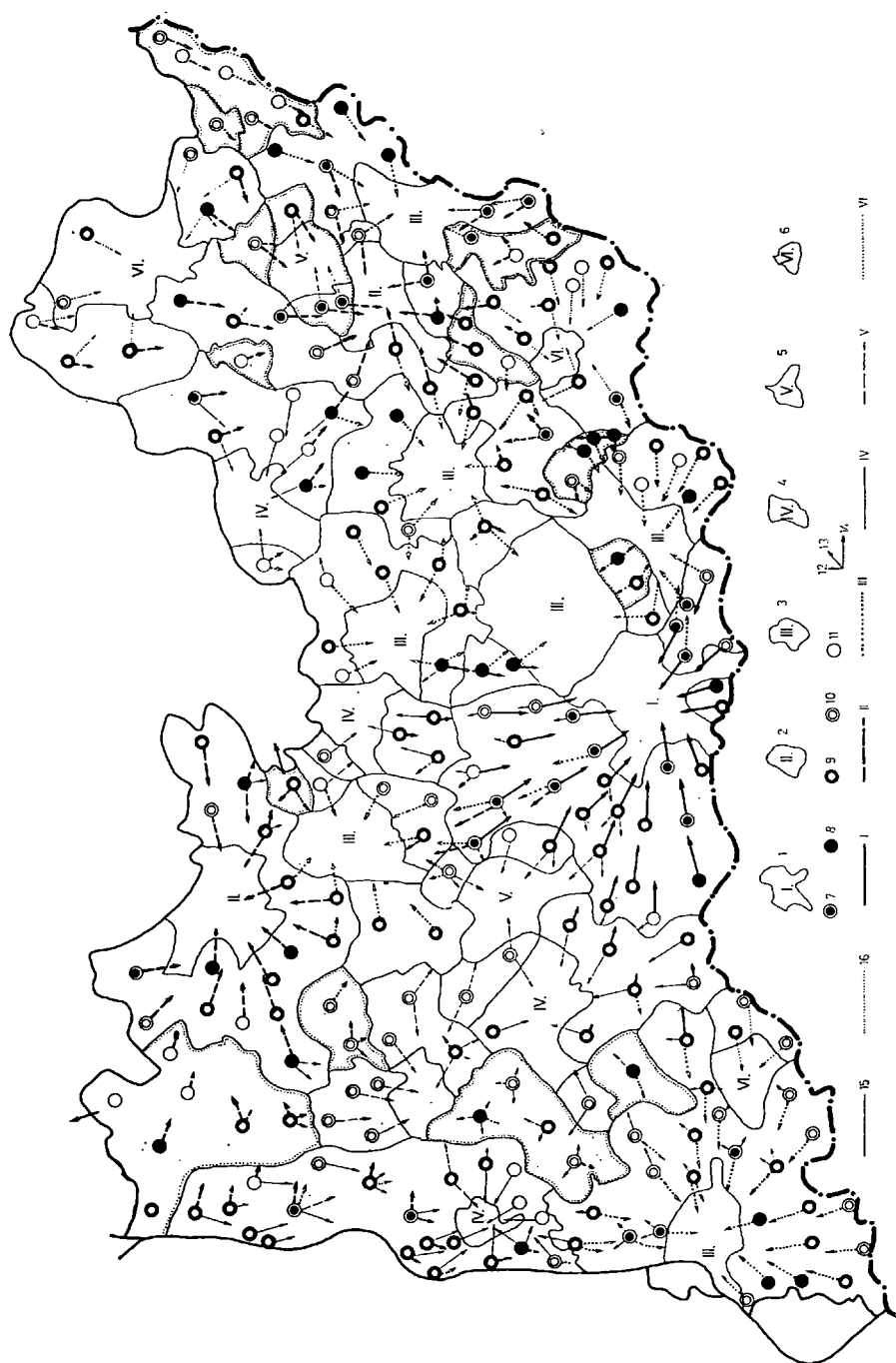


Fig. 5.

Summary: In spite of the favourable transport services in the economic region the traffic-geographical situation in the region is unfavourable. The rate of the settlements in this unfavourable situation in the region is 59.2%. It is a fact that the existence of main roads and main railway lines alone does not improve the transport level; it only provides a possibility for the settlements of a higher level to develop a many-sided attractiveness which could improve the traffic-geographical situation in their environments, too.

Economic development could improve the traffic-geographical situation in the major part of this economic region. This development would also improve the importance of the centres of a higher level. The prospects of further development could be the more effective exploitation of the Rivers Tisza and Danube as a means of transport, as well as the building of more bridges across these rivers.

4. *Connections between the mobility of the population and the traffic-geographical situation.*

4.1. The changes in the number of the population.

The number of permanent inhabitants in the Southern Part of Great Plain in 1974 was 1451.2 thousand people, 14% of the population of the whole country, and the density of population was 80 people per square kilometre — below the country-wide average. Between 1920 and 1940 the natural growth of population overcame the migration loss, so the population showed a growing tendency. During the decades following the situation underwent a total change, the rate of the migration loss became extremely high especially in Bács and Békés counties, and this drawback could not be compensated for any more by natural growth. So the population of the Southern Part of Great Plain started to decrease. The rate of this decrease is especially high in Bács-Kiskun and in Békés counties. At the same time the number of population increased in Csongrád county, but this could not counterbalance the loss in the above-mentioned two counties.

The decrease in population was not at the same rate in different areas. Other factors contribute to the differences between the counties, i.e. there are areas which undoubtedly release population and, although quite obscurely, one can notice areas which take in a number of population, as they are more attractive than others. So

Fig. 5. Number of journeys per week in the settlements of the Southern Part of Great Plain and the distributional rate of them to the major settlements

- 1= regional centre 2=county centre (second-rate) 3=third-rate centre 4=fourth-rate centre
5=fifth-rate centre 6=sixth-rate centre Total journeyes per week 7=301— 8=201—300 9=101—200
10=51—100 11=—50 Rates of connection 12=66—100% 13=33—66% 14=0—33% 15=boun-
dary of traffic-region 16=boundary of territory, connected not unambiguously to the centres
- I= connection to the first-rate centres
 - II= connection to the second-rate centres
 - III= connection to the thirds-rate centres
 - IV= connection to the fourth-rate centres
 - V=connection to the fifth-rate centres
 - VI=connection to the sixth-rate centres

it can be declared that a regroupment of the population began to become considerable within the region.

The decrease of population in the Southern Part of Great Plain did not only continue, but also became more and more considerable, although one can notice promising signs of certain changes, e. g. the migration loss decreased considerably. Unfortunately, the natural growth is very low so this explains why the decrease in population still goes on.

The difference in the number of population during the last two decades is understandable; the socialist organization and mechanization of agriculture was followed by a release of a large labour force which could not be employed by the industrial branches in the same region so it left for industrial regions. By the end of the second decade the agricultural co-operatives were stabilized and, by developing their own work-shops, they could employ not only their own people, but they were also able to provide with work a lot of people who came back from the towns.

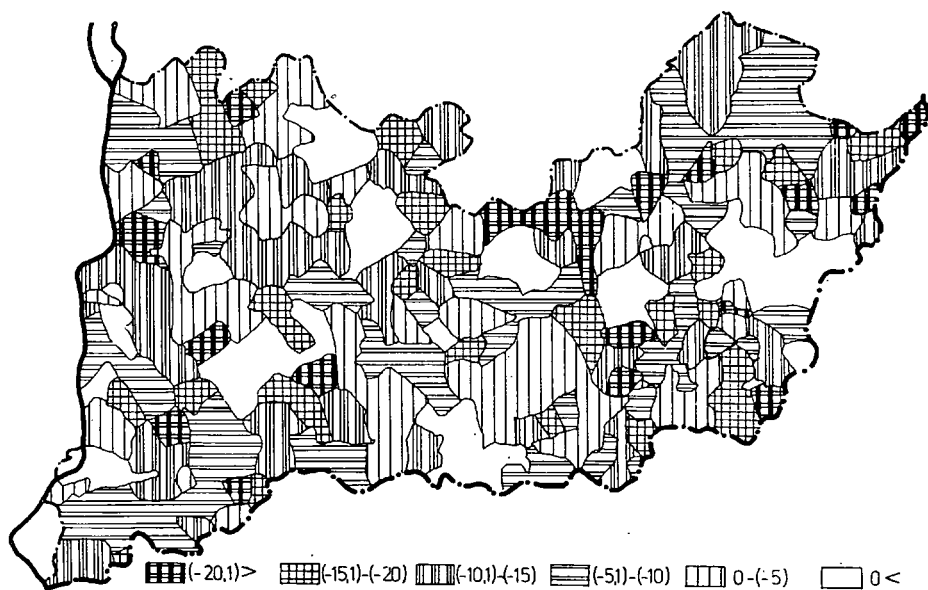


Fig. 6. Changes in the number of population in each settlement (1960—1970, %)

The extensive development of the Southern Part of Great Plain consumed all the sources of labour force in the towns, so those people who could not find any work opportunities in agriculture were provided with work in the towns. Therefore, by the end of the sixties, the region ceased to send out population. On the other hand the areal differences of the changes became more prominent. Clear areas developed — one kind that sent out, and another that received population (fig. 6).

The two areas are in extremely close connection; this is expressed in the migration tendencies in these areas. These facts are supported by our representative researches,

which testify that a lot of people tend to move from far-away villages and settle in the ones which are near the big cities. This does not occur in the reverse direction. E. g. there are a lot of people coming from Deszk and Tiszasziget to Szőreg, but people do not move from Szőreg to the former places. The situation is the same to the West of Szeged — a lot of people come from Bordány and Zsombó and settle in Kiskundorozsma.

The development of areas which have an outstandingly high density of population is in close connection with the transport-geographical situation of the settlements. The numerical growth and decrease of population is modified by a lot of factors (natural growth, settlement forms, economic level, industrial development, etc.), but among these factors, as a result of areal distribution, the effect of the traffic-geographical situation is obvious. Numerical data about population in economic centres are different from those of settlements belonging to the inner circle of attractiveness of these centres, and the same data are again different for settlements which are situated on the periphery of these areas of attractiveness and which are in an unfavourable transport-geographical situation. Areal differentiation shows regular zones in the Southern Part of Great Plain which, of course, are modified by local factors.

Correlation calculations prove the close connection between the numerical changes of population and the traffic-geographical situation of settlements (see table 2), where the values of " r ", especially in the regions of centres which have a strong attraction, are quite high.

4.2. Areal differences in the migration of population are the same as the rates of the numerical changes in population (see fig. 7). This is understandable, as in the Southern Part of Great Plain the effect of natural growth is completely overshadowed by migration. So one can find the same regularities beyond areal differences. As a result of all this the correlation values gained by research into the traffic-geographical situation of settlements are in the closest correlation (see table 2).

The difference between the values " r " is undoubtedly the result of the regularity with which the effect of the traffic-geographical situation depends on the attractiveness and distance of the centres. So the bigger a centre is, the more total and strong its function is, and the greater its effect on the settlements in its environment will be. Correlation values between the traffic-geographical situation and migration include this phenomenon, i. e. the difference of the various centres. As a result of this, local factors have a greater effect in the settlements which are far away from the towns, i. e. the effect of local factors is inversely proportional to the values of the traffic-geographical situation.

The truth of the regularity described above is supported by the close connection between the rate of migration and that of the population travelling regularly. Generally speaking, numerical values of migration are smaller in the settlements which have a great number of population travelling to towns regularly (see fig. 8). This is obvious again, since the part of the population which gets away from the agricultural branches does not necessarily leave the place of origin, because daily commuting can solve the problem of getting to the new work-place. During the past decade — as a result of the sudden growth in new working opportunities in towns and also of the fact that a lot of people left their work in agriculture — commuter areas around towns extended to such a size that one can hardly find an area which is not inside this new "*commuting wave*".

TABLE 2.

Correlation coefficients between the migration of population and the traffic-geographical situation of settlements per economic microregion

Factors	R e g i o n s							Southern Part of Great Hungarian Plain
	Baja I.	Kecskemét II.	Kkhalas III.	Szeged IV.	Szentos V.	Békéscsaba VI.	Orosháza VII.	
Changes in population	0,31	0,69	0,48	0,57	0,71	0,54	0,31	0,50
Rate of migration	0,34	0,73	0,44	0,50	0,74	0,60	0,37	0,50
Rate of agricultural labourers	—0,31	—0,70	—0,57	—0,50	—0,78	—0,60	—0,56	—0,54
Changes in the rate of agricultural labourers	—0,18	—0,60	—0,50	—0,18	—0,71	—0,60	—0,17	—0,36

The connection between the traffic-geographical situation and commuting is very important from many different respects. It is very useful from the respect of the micro-region because it is a great help in the research into the connection between the centres and their environments, and, through all this, it helps to discover the borders and the areal structure of regions. Furthermore, it calls our attention to a lot important connections, it serves as a basis for the pre-estimation of the growth of population, and it helps to make the balance of labour forces in the given area.

4.3. In the case of the areal differences in the rate of agricultural wage-earners one can notice a relationship between the industrialized and industrially developing centres and the settlements in their environments. The rate of agricultural population is a lot higher in the settlements which are far from the centres than it is in the ones which are near them, i.e. where commuting to these centres can be carried out easily. This connection is expressed by the correlation co-efficient set up between the values of the traffic-geographical situation and the rate of agricultural wage-earners (Table 2).

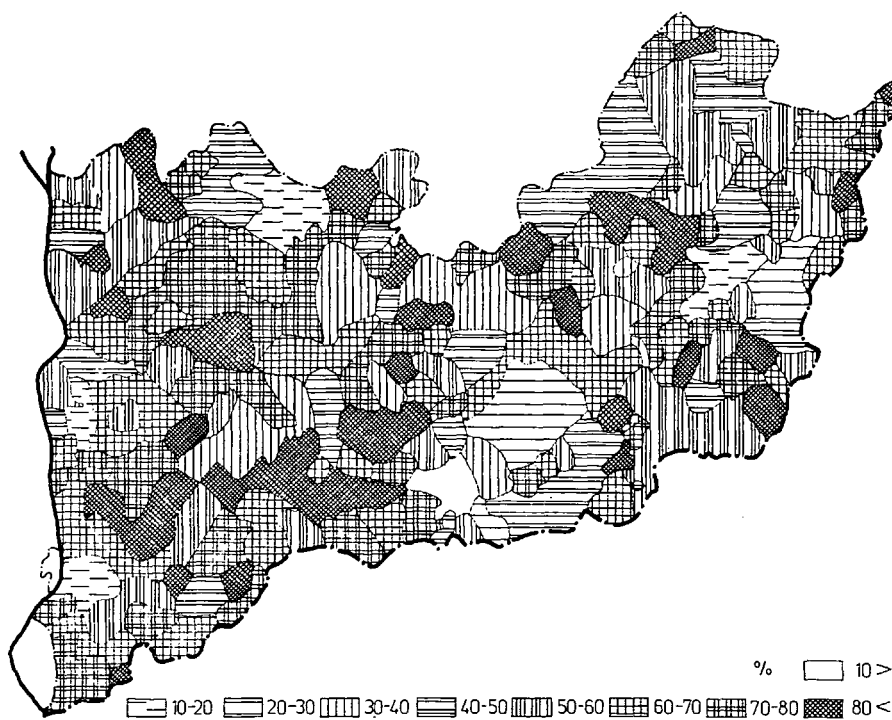


Fig. 9. The rate of agricultural wage-earners in each settlement (1970, %)

The traffic-geographical situation in 1970 — according to our estimations — determined the rate of agricultural population to the extent of 16—35% (this is different in each micro-region). These values are not outstandingly high, but they must

be taken into consideration since the effect of other factors is frittered away and the areal regularities of these other factors are not unambiguous (see fig. 9).

As there are differences in the number of population, so there is a difference according to the size of the settlements, i.e. there is local industry in the bigger villages, so the rate of industrial wage-earners is a lot higher in these places than it is in small villages. Furthermore, the population of the periphery must also be taken into consideration, because the rate of agricultural workers there is higher than among the population in the villages. As a result of this, the rate of agricultural workers is higher in the villages which have a great number of population on the periphery.

The situation of the areal rates of agricultural wage-earners can be taken as a function of several factors, but it is certainly the result of various courses in the past decade. So the rates of the wage-earning population cannot be separated from the course itself even if there are differences in the areal rates. The connections between the course and its result are well known, but here we are going to emphasize one factor only, i.e. the effect of the traffic-geographical situation.

In the fifties the decrease in the rate of agricultural wage-earners occurred most intensively in the settlements which were near towns and, accordingly, were in a favourable traffic-geographical situation in the Southern Part of Great Plain. The situation was almost the same in villages which had local industry. The population census reflected the above-mentioned facts. So this is the startingpoint for the changes in the following decade.

The areal difference in the decrease of agricultural wage-earners was more distinct in the sixties than before. This decrease slowed down in settlements in a favourable traffic-geographical situation because this process was quite advanced there at that time; in other areas it accelerated, but it was not the same everywhere. The deteriorations resulting from the differences in the basic level can be registered with the help of the following simple equation:

$$M = \frac{a - b}{b}$$

where M = changes in the agricultural wage-earners

a = percentage rate of agricultural wage-earners in 1960

b = percentage rate of agricultural wage-earners in 1970.

Values calculated without the deteriorations give us a better picture of the changes in the rate of agricultural wage-earners (see fig. 10) and it also shows the effect of the industrial centres.

Correlation values of the connection between the traffic-geographical situation and changes in the rate of agricultural wage-earners (1960—70) are lower than in the case of migration or in the case of numerical changes in the population.

Re-groupment of population is a more complicated process than migration. Although the causes are the same and there is a strong connection between the two processes, the higher the agricultural population in an area is, the stronger the migration is, and vice versa. The considerable migration was followed by a decrease

in the rate of agricultural wage-earners, but, quite independently of this, local factors in the re-groupment are eminent, and, as a result of this, the effect of the traffic-geographical situation is moderate.

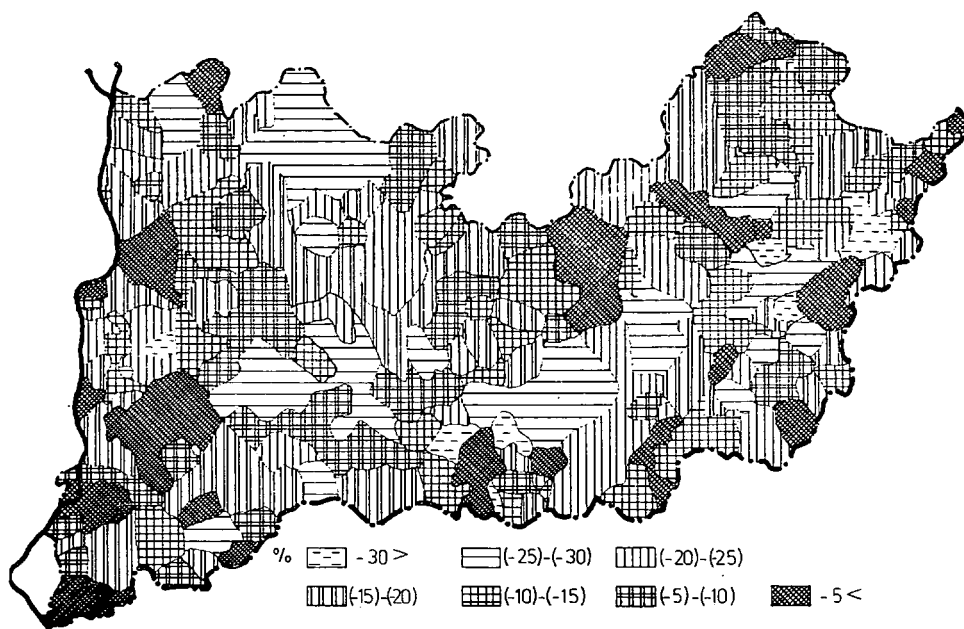


Fig. 10. Changes in the number of agricultural wage-earners in each settlement (1960—1970, %)

4.4. Categories of settlements according to changes in population. Numerical changes in population, migration, re-groupment, and the rate of the population travelling regularly, are in close connection in spite of the fact that, in some cases, they are in different directions owing to various local factors. This is understandable because every factor is, first of all, a function of the economic courses. This is why they are apt to express the essential characteristics of settlements, and one can group the different types of settlement according to them. Taking into consideration the above-mentioned factors, we can make some main types of settlement in the Southern Part of Great Plain (see fig. 11).

a) Indices of the mobility of population are favourable; changes in population are positive, the balance of migration is active or it became active during the last few years. The rate of the agricultural population is low, it is decreasing moderately; transport and migration centres.

b) Indices of the mobility of population are relatively favourable; the numerical decrease in population is above average, migration loss is not above average, the rate of those travelling regularly is high, the rate of the agricultural population is below average, and the settlements are in a favourable traffic-geographical situation.

c) Indices of the mobility of population are medium; settlements which represent as medium value, and these values are in accordance, come in this group.

d) Indices of the mobility of population are unfavourable; they are contradictory from the respect of the various factors and local effects, e. g. there is not a considerable decrease in the population in spite of the migration loss. The rate of the agricultural

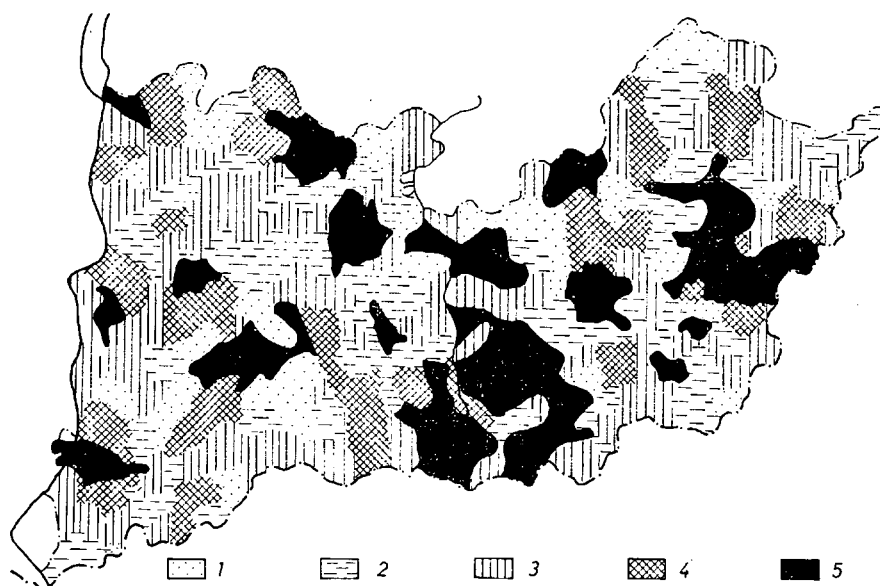


Fig. 11. Settlement types on the basis of the mobility of population (1960—1970)

- 1=very unfavourable
- 2=unfavourable
- 3=medium
- 4=relatively favourable
- 5=favourable

population is average but, in spite of this, migration loss is high, or the rate of the agricultural population is high, but the other factors are medium

e) Indices of the mobility of population are very unfavourable; indices of population are below average, some of them far below average. It means that in these settlements the numerical decrease in population and the migration loss were considerable. The rate of the agricultural population is high, whereas that of those travelling regularly is low. The pace of re-groupment is different depending on local factors. The traffic-geographical situation is unfavourable.

There is also an areal difference as far as the above-mentioned categories are concerned; the centres of micro-regions and settlements in their environment come in the first group. The next group is formed mainly of settlements in the environment of centres, and of giant villages. The third forms a transitory zone and, in the last two, it is the settlements on the periphery that make an "outer" zone.

Observing the indices used to create the categories, we can see that the effect of the traffic-geographical situation is quite eminent in each case and, while it is considerably strong as far as the rate of the regularly travelling population and the migration are concerned, it is quite weak in the case of the changes in the agricultural wage-earners. This means that the effect of the centres can be traced even through these various factors, although this effect is quite obscure.

The close connection between the settlements grouped in the above-mentioned categories and their own traffic-geographical situation can be expressed by the following correlation indices:

Region	Correlation index
1. Szentes	—0.88
2. Szeged	—0.61
3. Békéscsaba	—0.54
4. Baja	—0.36
5. Kecskemét	—0.27
6. Orosháza	—0.21
7. Kiskunhalas	—0.17

There are two different groups of centres. In the case of the first, the index is relatively high, while in the case of the other it is low. In the last three cases the low values can be explained easily. The settlements in the North of the Kecskemét region are in a special situation. Their traffic-geographical situation in relation to Kecskemét is unfavourable, while their indices in relation to Budapest are relatively good. Furthermore, there is a contradiction between the unfavourable population-indices and situation in the settlements South of the town. This contradiction became less prominent owing to the changes in the demographical indices in the past few years, but this cannot be expressed by the average of the past decade.

In the Orosháza region the effect of the town in the environment of Mezőkovácsháza can hardly be noticed at all; the mobility of the population is affected by local factors, so the correlation index is very weak.

The correlation index is the lowest in the Kiskunhalas region. The effect of the centre on the population indices of the settlements in the environment is very weak; the changes cannot be expressed by the average of the past decade.

The grouping of population was carried out according to the changes in population in the sixties. This means that these are not basic categories and that the changes in the following years may cause basic changes, too. This grouping was needed in order to define the inner areal structure of the region and, with the help of this, and taking into consideration the areal differences of tendencies, we might come to more exact conclusions regarding the future.

REFERENCES

1. Census data 1949. 1960. 1970. KSH. Budapest, 1950. 1961. 1971. (Népszámlálási adatok)
2. Demographical Yearbook, 1970. KSH. Budapest, 1971. (Demográfiai Évkönyv)
3. *Mrs. Döbrönte—R. Mészáros—B. Csatári*: Definition of the traffic-geographical situation of settlements of Southern part of Trans-Danubian mezoregion Acta Geographica T. XV. Szeged, 1975.
(A települések közlekedésföldrajzi helyzetének meghatározása a dél-dunántúli mezokörzet példáján).
4. *Gy. Krajko* (1961): Principal aspects of the connections between economic regions and transport. Földrajzi Értesítő, X. évf. Budapest.
(A gazdasági körzetbeosztás és a közlekedés összefüggésének néhány elvi vonatkozása).

5. Gy. *Krajko* (1973): Bordering of microregions on southern part of Great Hungarian Plain. Földrajzi Értesítő, XXII. évf. Budapest.
6. Z. *Palotás* (1963): Some economic-geographical aspects in the development of transport Földrajzi Értesítő, XII. évf. Budapest
(A közlekedés fejlődésének néhány gazdaságföldrajzi tapasztalata).
7. G. *Rehbein*—H. *Wagener* (1962): Basic questions of traffic economy. Műszaki Kiadó, Budapest.
(A közlekedésgazdaságtan alapvető kérdései)
8. J. *Tóth* (1972): Areal differences and changing tendencies of the population on the periphery and in cottages in the southern part of Great Hungarian Plain (1960—1970)
Földrajzi Értesítő, XXI. évf. Budapest.
(A külterületi — tanyasi — népesség területi különbségei és változási tendenciái a Dél-Alföldön.)